

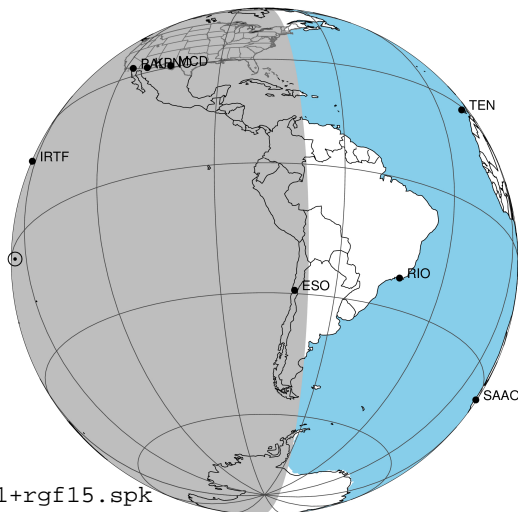
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-03-29T10:41:04.610  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068713061832895104  
 2Mass ID (if available) : 17514335-2252574

Jupiter 2031-03-29T10:41:04 K9.74 G14.97 Pgt

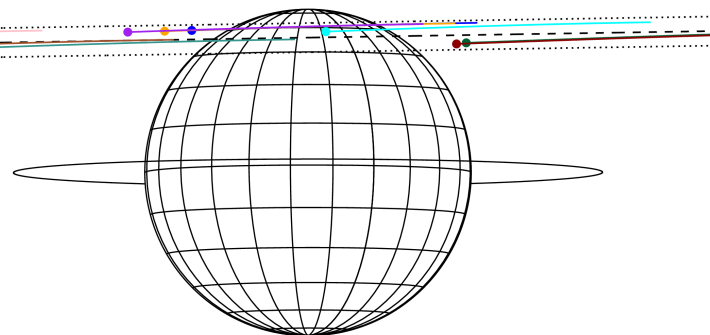
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s

RUWE (>1.4 is poor) : 1.42  
 K magnitude : 9.744  
 G magnitude : 14.968  
 RP magnitude : 13.662  
 BP magnitude : 16.844  
 DUPflag : 0  
 Distance (au) : 5.041  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 7.96  
 Sun-Target sep (deg) : 100.02  
 Sun-Moon sep (deg) : 172.78  
 B (ring opening deg) : -2.62  
 PA of pole (deg) : 0.05  
 Pole direction: RA (deg): 268.05699  
 Dec (deg): 64.49651  
 C/A sky separation (") : 16.160  
 C/A sky separation (km) : 59080.1  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-03-29T10:41:04 K9.74 G14.97  
 Pgt



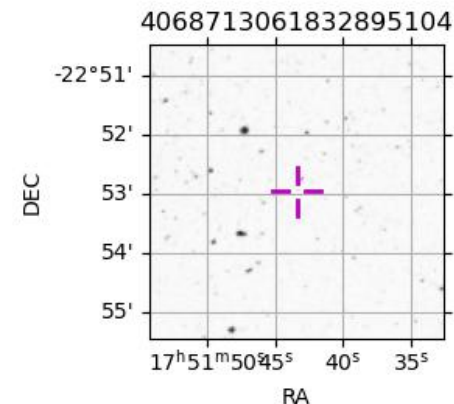
Earth  
 PIC  
 PAL  
 KPNO  
 MCD  
 TEN  
 IRTF  
 RIO  
 ESO  
 AAT  
 MSO



2031-03-29T10:41:04.6100 α: 17 51 43.3647 δ: -22 52 57.477 C/A \*\*\*\*\* PA 180.92 deg v\_sky + 7.96 km/s D 05.04 AU  
 Credit: Styled after SORA/Lucky Star

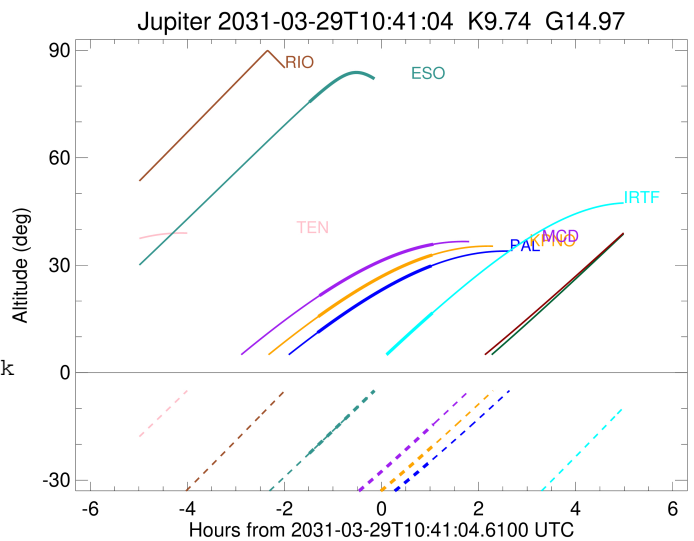
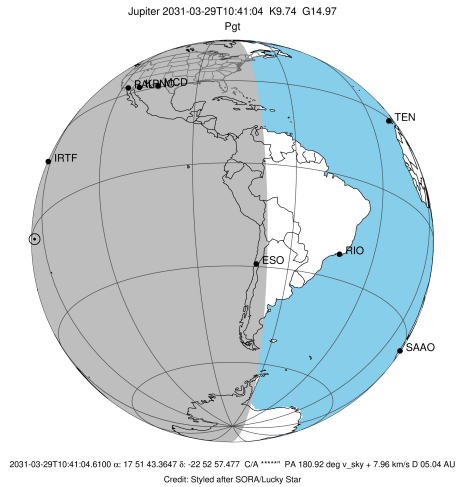
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAR 29 09:22 - MAR 29 11:42	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 29 09:22 - MAR 29 11:43	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 29 09:24 - MAR 29 11:45	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5		MAR 29 11:44 - MAR 29 11:44	Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	MAR 29 09:11 - MAR 29 09:11	Pin
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-29T10:31:53.550
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 4068713061832895104
2Mass ID (if available) : 17514335-2252574
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.744
G magnitude          : 14.968
RP magnitude         : 13.662
BP magnitude         : 16.844
DUPflag             : 0
Distance (au)       : 5.041
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 7.96
Sun-Target sep (deg) : 100.02
Sun-Moon sep (deg)  : 172.21
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.05
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation ("): 17.458
C/A sky separation (km): 63828.3
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

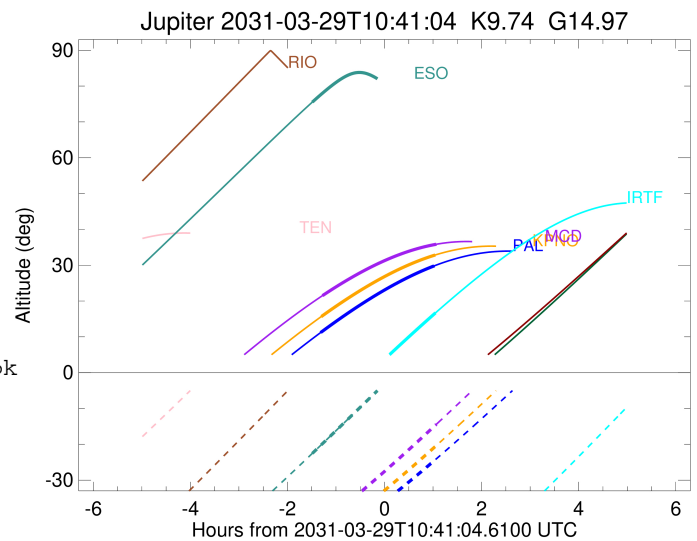
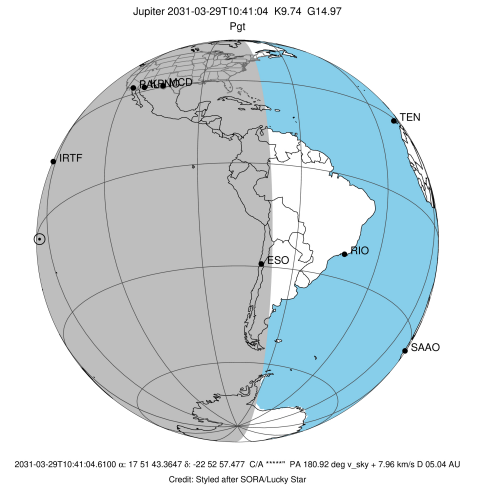


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-29T09:22:11.729	11.20	-47.72	71484.8	61.39	64.35
Jupiter	E	2031-03-29T11:42:35.707	29.82	-24.55	71484.4	64.61	67.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-29T10:32:47.790
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 4068713061832895104
2Mass ID (if available) : 17514335-2252574
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s
RUWE (>1.4 is poor) : 1.42
K magnitude           : 9.744
G magnitude           : 14.968
RP magnitude          : 13.662
BP magnitude          : 16.844
DUPflag              : 0
Distance (au)         : 5.041
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 7.96
Sun-Target sep (deg)  : 100.02
Sun-Moon sep (deg)   : 172.27
B (ring opening deg) : -2.62
PA of pole (deg)     : 0.05
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 17.467
C/A sky separation (km) : 63860.9
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
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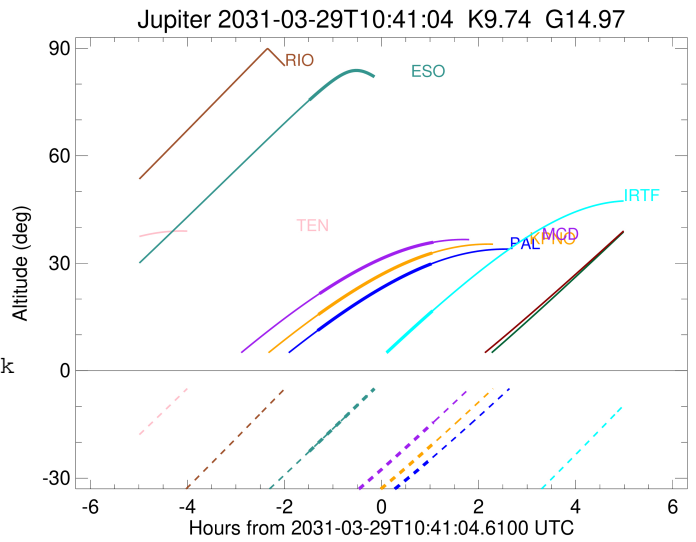
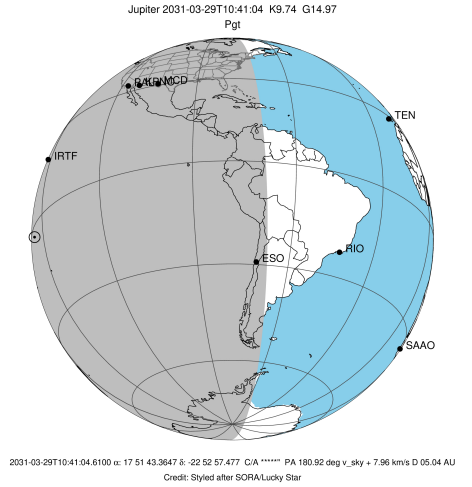


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-29T09:22:54.922	15.65	-45.96	71484.8	61.50	64.46
Jupiter	E	2031-03-29T11:43:36.868	32.83	-20.65	71484.4	64.58	67.29

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-29T10:34:21.610
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : MCD
Location            : McDonald Obs. 2.7m
Latitude (deg)      : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)       : 2.075
Gaia source ID      : 4068713061832895104
2Mass ID (if available) : 17514335-2252574
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.744
G magnitude          : 14.968
RP magnitude         : 13.662
BP magnitude         : 16.844
DUPflag             : 0
Distance (au)       : 5.041
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.96
Sun-Target sep (deg) : 100.02
Sun-Moon sep (deg)  : 172.35
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.05
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (" ) : 17.487
C/A sky separation (km) : 63931.8
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
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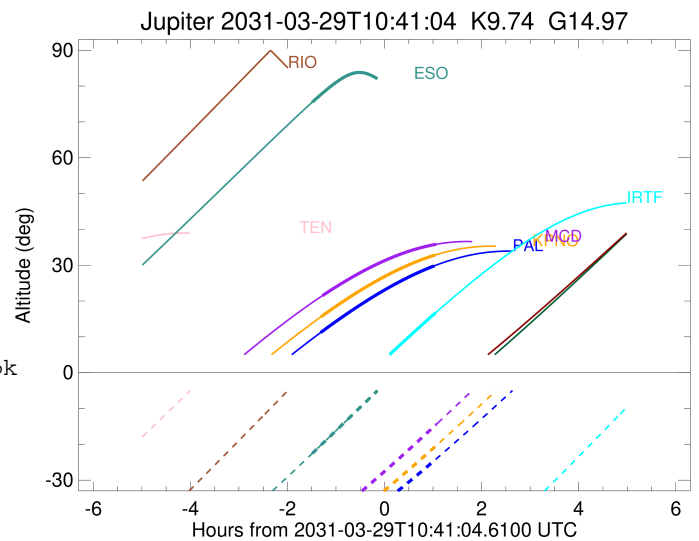
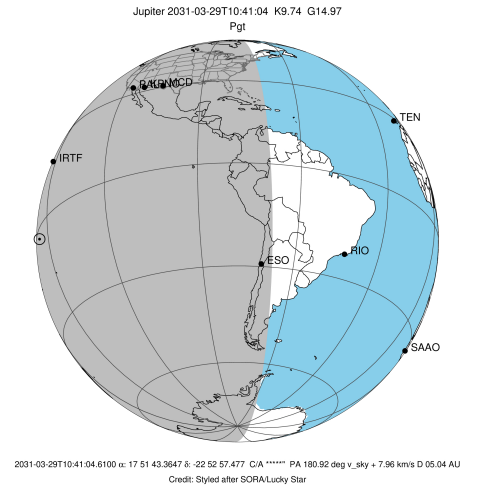


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-29T09:24:22.219	21.49	-41.86	71484.7	61.73	64.67
Jupiter	E	2031-03-29T11:45:09.373	35.84	-14.42	71484.4	64.57	67.28

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-29T10:25:51.460
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 4068713061832895104
2Mass ID (if available) : 17514335-2252574
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.744
G magnitude          : 14.968
RP magnitude         : 13.662
BP magnitude         : 16.844
DUPflag             : 0
Distance (au)        : 5.041
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.96
Sun-Target sep (deg) : 100.02
Sun-Moon sep (deg)   : 171.91
B (ring opening deg) : -2.62
PA of pole (deg)     : 0.05
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 16.787
C/A sky separation (km) : 61374.4
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

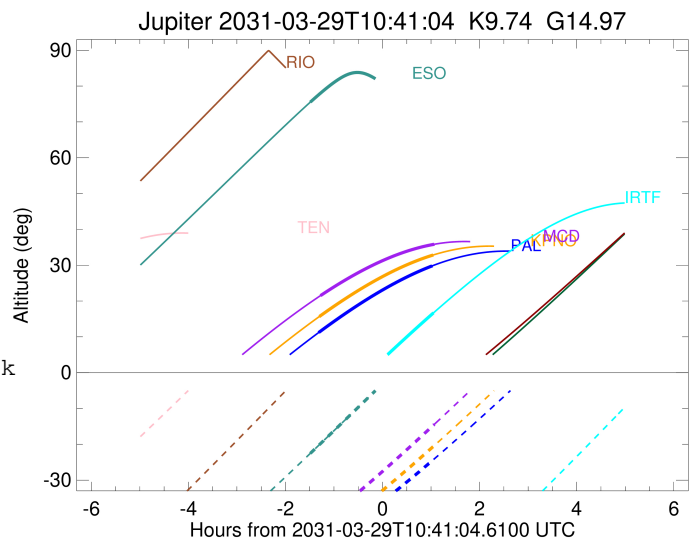
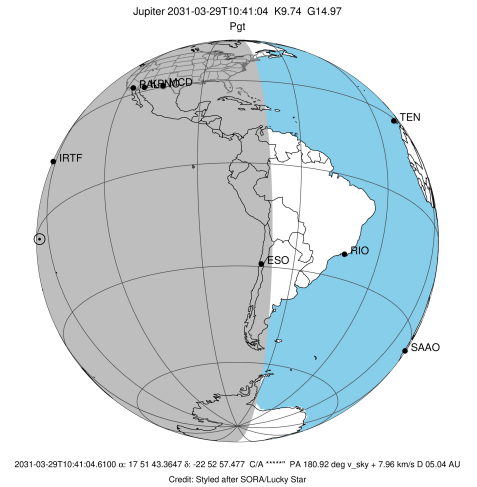


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-29T09:09:23.082	-16.31x	-60.11	71485.4	56.98	60.24
Jupiter	E	2031-03-29T11:44:07.425	16.69	-60.07	71484.8	61.10	64.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-29T10:43:03.580
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : ESO
Location            : European Southern Obs. (3.6m)
Latitude (deg)      : -29.26097
E. Longitude (deg)  : 289.26831
Altitude (km)       : 2.400
Gaia source ID      : 4068713061832895104
2Mass ID (if available) : 17514335-2252574
ICRS Star Coord at Epoch: 17h 51m 43.36474s -22:52:57.47719s
RUWE (>1.4 is poor) : 1.42
K magnitude          : 9.744
G magnitude          : 14.968
RP magnitude         : 13.662
BP magnitude         : 16.844
DUPflag             : 0
Distance (au)       : 5.041
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 7.96
Sun-Target sep (deg) : 100.02
Sun-Moon sep (deg)  : 173.02
B (ring opening deg) : -2.62
PA of pole (deg)    : 0.05
Pole direction: RA (deg): 268.05699
Dec (deg): 64.49651
C/A sky separation (") : 15.968
C/A sky separation (km) : 58378.3
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-29T09:11:43.235	75.49	-22.56	71485.9	53.70	57.13
Jupiter	E	2031-03-29T12:14:29.990	61.37	17.06x	71485.7	55.17	58.53